

EPA Briefing Package
Former Citizens Manufactured Gas Plant (MGP) site
(aka, Former Carroll Gardens MGP, Public Place, and Gowanus Green)

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EPA Briefing Package

Former Citizens Manufactured Gas Plant (MGP) site

(aka, Former Carroll Gardens MGP, Public Place, and Gowanus Green)

This document has been developed to serve as a briefing package for EPA, intended to guide an EPA-DEC discussion regarding the remediation at the former Citizens Manufactured Gas Plant (MGP) site. Pending review and updating, as needed, EPA-DEC (DEC) can decide if this document would appropriately serve as an attachment to a joint letter from both agencies to the CAG, to provide a written record clarifying the requirements and plans relative to the cleanup of the former Citizens MGP.

It is important to understand the history and framework of this site's participation in various NYS remedial programs over time, the remedial action goals and objectives, and the scope and status of the remedy currently being implemented at the site. This background is outlined below and attached are detailed responses/clarifications to stakeholders' questions/comments made over the past several months. It is important to note that, although the site has evolved through various DEC remedial programs over time, the structure of the remedy has remained the same – to remove coal tar source material from the upper soil column, extract deeper mobile tar, protect the Gowanus Canal from recontamination with a sealed barrier wall, and make the site protective of human health and the environment for an anticipated restricted residential reuse.

NYS Programmatic History and Framework

Four tax parcels (I-IV) comprise the former Citizens MGP site:

- The site was initially in the state's Voluntary Cleanup Program (VCP) and was known as the K-Citizens Manufactured Gas Plant – Carroll Gardens site (DEC site code V00360).
- In 2009, Parcels I thru III entered the NYS Brownfield Cleanup Program (BCP), as site code C224012. The BCP applicants at that time were the Brooklyn Union Gas Company (National Grid), the City of New York (owner of Parcels I and II) and a private third party (owner of Parcel III).
- Since National Grid is a "Participant" in the BCP, they are responsible for remediating both on-site and off-site contamination, and for reimbursing the state's costs to oversee their work. To address the off-site contamination, National Grid has entered into an Order on Consent with the USEPA to clean up coal tar that has been released to the Gowanus Canal.
- A few years ago, the private third party sold Parcel III to 459 Smith Street, LLC. Parcel III was removed from the Brownfield Cleanup Agreement (BCA) governing

the Citizens MGP site, and entered the BCP as a standalone site, “459 Smith Street” site (DEC site no: C224012B).

- In November 2020, Gowanus Green, the developer of Public Place, was added as a party to the BCA for Parcels I and II. However, the ownership of Parcels I and II currently still resides with NYC.
- Parcel IV of the former Citizens MGP (Site #224012), which is owned by Hoyt Parking, LLC, is being managed under an Order on Consent between National Grid and the DEC. This order also requires delineation of off-site contamination associated with the Citizens MGP site. To date, significant investigation has been completed on Parcel IV and in off-site areas. There is a good understanding of what contamination exists on this parcel and where it has migrated, but additional investigation work is needed. However, due to access issues on Parcel IV, and with other off-site property owners, National Grid has been unable to complete the remaining investigative work. Investigation data collected thus far is available at: <https://www.dec.ny.gov/data/DecDocs/224012/>

In summary, the former MGP is comprised of three sites being addressed under three separate legal agreements with the DEC. Parcel I and II are addressed as site number C224012, Parcel III is addressed as site number C224012B, and Parcel IV is being addressed as site number 224012. Notwithstanding these administrative changes over time, the cleanup program for Parcels I, II and III remains the same.

Carroll Gardens/Public Place Former MGP Site (DEC Site No. C224012) and 459 Smith Street (DEC Site No. C224012B)

The majority of the remediation for these parcels is complete. See the Summary of Remedial Elements section below for the description and current status of each remedial element, including some additional remedial work DEC recently requested. Parcels I-III are the primary focus of this document.

Upon successful completion of the remediation under the BCP, the entities on the BCA are issued a Certificate of Completion (COC) and a liability release. "Participants" in the BCP are responsible parties and are required to remediate contamination on- and off-site, as well as to reimburse the state for state (DEC/NYSDOH) oversight costs incurred. "Volunteers" in the BCP are only required to remediate on-site contamination and are not responsible to reimburse state oversight costs. DEC does not regulate which entity(ies) on a BCA fund(s) the remedial program when there is more than one entity on a BCA.

The NYS Department of Tax and Finance (DTF) regulates which entities are eligible for tax credits. The available tax credits include:

- remediated brownfield credit for real property taxes;
- environmental remediation insurance credit; and
- brownfield redevelopment tax credit.

For general information about BCP tax credit eligibility and rates, see the following link: <http://www.dec.ny.gov/chemical/101350.html>.

Remedial Action Objectives and Goals

The media-specific remedial action objectives (RAOs) sites are as follows:

Groundwater

- Prevent, to the extent practicable, contact with, or ingestion of contaminated groundwater associated with the site.
- Prevent, to the extent practicable, the migration of contaminated groundwater from the site.
- Remove, to the extent practicable, the source of groundwater contamination.

Soil

- Prevent, to the extent practicable, ingestion/direct contact with contaminated soil.
- Recover, to the extent practicable, DNAPL tar at the site.

Indoor Air

- Prevent, to the extent practicable, inhalation of contaminants volatilizing from soil or groundwater into closed structures.

BCP Remediation Track and Anticipated Use

The accepted remediation track and land use for the BCP sites is Track 4 restricted residential. Restricted residential use is defined in New York State Regulations (6NYCRR Part 375-1.8(g)) as the land use category where there is common ownership or a single owner/managing entity of the site (e.g., apartments, condominiums, etc.), and includes active recreational uses, which are public uses with a reasonable potential for soil contact. The BCP applications specifying this land use were subject to public comment periods when the applications were received.

Once the Track 4 restricted residential remedy implementation is complete, the site will be protective of public health and the environment for the planned use as apartments/condos, a school and a park, because all potential exposure pathways (direct contact, inhalation and ingestion) will have been addressed. The remedial summary below includes a discussion of how the remedial elements will address the various potential exposure pathways.

Summary of the Remedy for Parcels I-III

The remedy currently being implemented is outlined below, and is memorialized in the 2007 Decision Document, the 2018 100% Remedial Design, and the 2020 Explanation of

Significant Differences (ESD). These documents may be found at the DEC Info Locator/on-line repository links below.

<https://www.dec.ny.gov/data/DecDocs/C224012/>

<https://www.dec.ny.gov/data/DecDocs/V00360/>

<https://www.dec.ny.gov/data/DecDocs/C224012B/>

Summary of Remedial Elements

- *Removal of MGP source material* - Several tar-contaminated MGP structures present beneath the site have been removed, along with their contents and the associated heavily contaminated soils surrounding them, to depths up to 26 feet below grade. Additional source removal will be performed on Parcel I in the vicinity of the former generator house, adjacent to the old brick sewer line that crosses the site. This work will require the design and approval of a support of excavation system prior to implementation. MGP Impacts will also be removed from the former heavy oil pump pit (an intact subsurface reinforced concrete vault), and from areas adjacent to the foundation for the former pump house located on Parcel III. This work is anticipated to be performed later this year.
- *Proper disposal of the contaminated material* - Contaminated soil and tar removed from the excavations has been and will continue to be shipped off site for treatment and disposal at appropriately permitted facilities.

Installation of a sealed bulkhead barrier wall to prevent recontamination of the canal -

The majority of the subsurface portion of the sealed bulkhead barrier wall has been installed and is nearly complete along the Gowanus Canal to control the migration of tar that has migrated to depths beyond the reach of the excavation. While the 2007 Decision Document indicated a potential for the wall to extend inward on the north and south ends (i.e., wing walls), data and information gathered since 2007 indicated that the sealed bulkhead/barrier wall with upland recovery wells, including recovery wells at the end of the barrier wall will prevent contamination from entering the canal. This was documented in the 95% design submittal, which EPA received and reviewed in 2017. Specifically, DNAPL transmissivity testing during the supplemental design investigation showed a low potential for DNAPL recoverability, indicating that, where present, DNAPL in soil is relatively immobile. Further, a review of data at the eastern (Parcel II) and southwestern (Parcel III) edges of the site shows that DNAPL-saturated soils are limited in both horizontal and vertical extent in these areas, and generally are not present or diminish above elevation -40 feet NAVD88. The limited presence of DNAPL in the shallow zone confirms the reduced NAPL transmissivity in this zone. In effect, the DNAPL has already migrated vertically to depth rather than continuing to migrate laterally. Moreover, DEC understands that EPA is requiring and will be overseeing installation of a sealed bulkhead barrier wall across the end of Huntington Street and elsewhere along the entirety of EPA's project area (sealed where

appropriate) to facilitate the dredging project. EPA representatives have indicated that the sealed bulkhead across the end of Huntington Street will tie into the sealed Citizens bulkhead to the north and the sealed bulkhead installed along the Quadrozzi property (240 Huntington Street) to the south. This series of connected sealed bulkhead barrier walls combined with tar collection on the upgradient side provide redundancy in the design for protection of the canal from migration of remaining NAPL. The sealed bulkhead barrier wall with the tar recovery wells meets EPA's criteria for preventing recontamination of the canal following implementation of the upland remediation and the remediation in the canal. The remaining portion of the bulkhead to be completed is an approximately 30-foot wide opening around the gas transmission tunnel (gas shaft), where sheeting cannot be driven too close or above this sensitive utility corridor. National Grid recently submitted a preliminary plan to DEC, referred to as the soft shoreline proposal, for the closure of the bulkhead (Appendix G). DEC has agreed in principle to this approach but has requested additional information from National Grid regarding implementation and long-term maintenance. It is DEC's understanding that National Grid will be meeting with EPA representatives in the near future to present their proposal, which DEC plans to attend. Briefly, the soft shoreline proposal entails placement of a treatment media, such as AquaGate, alongside of the shaft to mitigate the potential for contaminant migration from the site to the canal and from the canal to the site. The treatment media will be placed below a series of stacked gabions (rock filled cages) to keep the treatment media in place and provide stability and support to the shaft.

- *Continued removal of coal tar from locations below the excavation depth* - Inside the barrier wall, mobile tar has been and will continue to be removed through a series of tar recovery wells. Tar has been monitored and recovered from on-site recovery wells since 2010. Several of these wells were decommissioned to enable the current construction of the sealed bulkhead barrier wall and/or the excavation of the heavily contaminated soil. However, several temporary recovery wells have been installed to monitor and extract potential coal tar/NAPL (non-aqueous phase liquid) downgradient of the MGP holders during remedial construction. A network of new and existing recovery wells will be re-established in the near future along the entirety of the sealed bulkhead barrier wall, at locations/depths which have been determined to be the most effective for the recovery of tar and prevention off-site migration of mobile tar.
- *Installation of a hydraulic relief system behind the sealed bulkhead barrier wall* - The hydraulic relief system will collect, screen and manage storm water and water which infiltrates the ground and ultimately discharges to the canal to prevent both flooding at the site and increase the hydraulic head that could increase coal tar mobility and destabilize the sealed bulkhead barrier wall. The hydraulic relief system consists of a series of structures resembling a standard manhole from the outside that are equipped with a hydrodynamic separator for the removal of suspended solids, debris and floatables (oil/grease, etc.). Five of the seven manholes in this system were recently

installed along the extent of the sealed bulkhead barrier wall. These structures are interconnected by perforated piping to capture additional stormwater that infiltrates the ground. This system was installed within the clean backfill and will not intercept the deeper remaining MGP contamination, which is being addressed by the sealed bulkhead barrier wall and tar recovery wells. The final two manholes are located closest to the gas shaft and will be installed, with associated piping, when the gas shaft stabilization work is complete.

- *Placement of a site cover* - A site cover will be installed to allow for restricted residential use of the site. The cover will consist of pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs, or a two-foot vegetated soil cover in greenspace areas. This element is the subject of significant concern to the community. The 2007 Decision Document requires removal of contaminated soil present within the top eight feet across the site. As part of the design, additional study was undertaken that demonstrated the coal tar source areas were generally limited to areas in the immediate vicinity of the former MGP structures. As such, the sitewide excavation of soil to a depth of eight feet was deemed unnecessary and, it was concluded that remaining contamination, such as that associated with historic fill, could be effectively addressed by placement of a site cover. This would render the site suitable for restricted residential use, consistent with the 6NYCRR Part 375 requirements for BCP track 4 remedies.
- *Institutional and Engineering Controls (IC/ECs) and Site Management* - The remedy requires institutional controls, including placement of an environmental easement and implementation of a Site Management Plan (SMP). The SMP is referenced in the environmental easement, which runs with the land, such that all future owners are made aware of, and are bound by, the easement and SMP requirements.

Contrary to the misinformation circulating in the community, the Site Management has always been a requirement for this site remedy, and compliance with the SMP will always be under the DEC/NYSDOH's oversight.

- Environmental Easement - The environmental easement provides the legal framework/authority for implementation and enforcement of the SMP. Although the easement will allow the use and development of the property for restricted residential use, the specific land use is a local decision subject to local zoning laws. Neither the EPA nor the DEC have jurisdiction/authority to issue land use approvals for the specific development on any property/site. DEC's/NYSDOH's role is to ensure that the selected remedy is protective for the reasonably anticipated future use which, in this case, is restricted residential.

- SMP – The SMP contains the long-term operation, monitoring and maintenance requirements for the institutional and engineering controls listed above. The SMP also includes an excavation work plan for future on-site work, submittal of Periodic Review Reports (PRRs) certified by a NYS licensed professional engineer that the ICs/ECs remain in place and functioning as designed.

Concerns have been voiced that the contamination represents a threat for vapor intrusion. There are provisions in the SMP for the evaluation of potential for soil vapor intrusion (SVI) for any occupied buildings developed on the site. If SVI is identified actions to address exposures related to SVI must be implemented. Typical SVI mitigation measures include vapor barriers and vapor mitigation systems.

It is NYCOER's practice to require vapor barriers on all new construction. EPA indicated vapor barriers are preferred to prevent SVI into buildings. DEC/NYSDOH require vapor barriers as a component of an active sub-slab depressurization system (SSDS) on new construction. This is an added redundancy for the overall vapor mitigation design.

An active SSDS, similar to a radon mitigation system, is typically comprised of a series of perforated pipes beneath a building slab connected to a blower that creates a suction (pressure differential) under the slab to remove vapor from beneath the building and addresses the potential for vapors to enter and accumulate inside the building. The vapor is vented via a solid pipe above the roof line. Treatment of this effluent may be included if discharge calculations/emissions testing indicates it's necessary to meet air discharge requirements, but the majority of these systems do not require treatment due to the discharge concentrations. If an SSDS system is required, it would be one of the engineering controls which would need to be certified in the PRR.

In closing:

We hope that this collective package will answer many of the questions and correct the misinformation regarding the former Citizens MGP site remediation project and restore the public's confidence in the safety and protectiveness of the selected remedy for the site.

Questions concerning the cleanup should be directed to the DEC Project Manager, John Miller, at john.miller@dec.ny.gov. Please direct health-related questions on the Citizens Cleanup to the NYSDOH PM, Steve Berninger, at beej@health.ny.gov.

Attachment 1

Below are issues/concerns raised by the public and others in recent months. Many of these issues were raised at the December 1, 2020, and subsequent, CAG meetings. Others were raised to the DEC by the CAG following DEC's presentation at the July 30, 2020 CAG meeting. A detailed response is offered to each of the issues raised to provide a clear and accurate explanation.

1. Comment: The CAG recently passed a resolution requesting that the EPA review the remediation plan at Public Place.

Response: As noted in the March 22, 2021 letter from EPA and DEC to the CAG, as part of EPA's assessment of the remediation effort at this site, EPA and DEC have agreed to work cooperatively with all involved parties to ensure the remediation will be protective of public health and the environment and that the basis for the remedy is clearly communicated to the public. It should be noted that in the summer of 2017, experienced EPA staff reviewed and discussed the 95% design documents for this site with the DEC, and subsequently indicated via email that they had no comments on the 95% design. There were no substantive changes between the 95% design and the 100% final design submitted in November 2017, which DEC subsequently approved in January 2018. The final remedial design contains the components of the 2007 Decision Document, as well as the site cover which was officially memorialized in the August 2020 ESDs found at the links in the attached briefing. The remediation of the former Citizens MGP site is nearing completion in compliance with the approved design and the EPA schedule for the Gowanus Canal cleanup action.

Once the joint remedy reassessment is complete, the agencies anticipate jointly communicating with the CAG in the near future.

2. Comment: How does the current remediation plan differ from the DEC's 2007 Decision Document?

Response: The difference between the 2007 Decision Document (DD) and the August 2020 Explanation of Significant Difference found at the links in the attached briefing, and excerpted here, is as follows:

"The 2007 DD requires removal of (MGP) contaminated soil present within the top eight feet across the site. As part of the design, additional study was undertaken that demonstrated the coal tar source areas were limited to areas in the immediate vicinity of the former MGP structures. As such, the sitewide excavation of soil to a depth of 8 feet was deemed unnecessary and, it was concluded that direct exposure to remaining contamination could

be effectively addressed by placement of a site cover. This would render the site suitable for restricted residential use, consistent with the 6NYCRR Part 375 requirements for BCP track 4 remedies.” (parenthetical added for clarity).

It was pointed out during the December 1, 2020 CAG meeting, data collected during the remedial investigation (RI) indicated that the MGP-related contamination is located between 7 and 150 feet deep. Therefore, there is no reason to remove the first 8 feet of material outside of the areas already targeted for source removal.

As noted above, data collected as part of the remedial design activities, further supported the conclusion that removal of the upper 8 feet of material across the site did not further the remediation of the former MGP site. However, because some metals and semi-volatile organic compounds (SVOC) that are consistent with typical historic/urban fill characteristics are present in unexcavated areas within the top 8 feet, the site cover mentioned above was added to the remedy to eliminate any direct contact exposure pathway to the historic fill and to comply with the requirements of New York’s Brownfield Cleanup Program (BCP). This approach to addressing urban fill is used routinely at BCP sites throughout New York State.

3. Comment: EPA management should have sought the EPA Project Manager’s input on how the remedy impacts the community and the canal since he was on an extended vacation when the EPA met with DEC to review and discuss the 95% remedial design.

Response: Experienced EPA personnel participated in the 2017 remedial design review. As noted in response to comment 1 above, EPA will reassess the cleanup plan for this site with DEC, and a joint communication to the CAG will be forthcoming.

4. Comment: It was asserted that only the EPA project manager and one National Grid employee have been involved with the site, with certain gaps in between, since 2010, and that since the DEC team members and National Grid’s consultant have changed over the years, the EPA project manager’s depth of knowledge regarding the former Citizens MGP site is greater than those at the DEC. It was also hypothesized that since the site was now in the NYS BCP instead of the NYS Voluntary Cleanup Program (VCP), that it was handled by a different office within the state, and that must be the reason for the changes in the design.

Response: DEC’s Remedial Bureau C (RBC) in the Division of Environmental Remediation (DER) has handled the Citizens MGP site from site identification and initial investigations under the former NYS VCP to present day. RBC has responsibility for all MGP sites statewide, ensuring consistency in DEC’s approach

to remediating these sites. Each of the DEC remedial bureaus, including RBC, handles other (non-MGP) types of remediation sites in DEC's various remedial programs (former VCP, BCP, State Superfund, Federal lead, etc); however, only RBC handles MGP sites. The transition of the former Citizens MGP site from the VCP into the BCP is detailed in the NYS Programmatic History in the attached briefing, as well as in the August 2020 ESDs found at the above links.

While some RBC staff working on this project have changed over the years, the current DER Division Director and Assistant Director previously worked in RBC for many years and had management responsibility for the state's MGP program, which included this site. Further, RBC's chief construction inspector has worked on this site since the beginning and is very familiar with every aspect of the site. In every industry, personnel change over the years, with new teams referring to and relying on the good work done by their predecessors. The same is true here.

With respect to the hypothesized reasoning for the design changes, the difference from the 2007 Decision Document was explained in response to comment 2 above.

5. Comment: It was asserted that the 25% design document anticipated removal of 8 feet of soil sitewide, placement of a plastic liner (to prevent infiltration to the deeper subsurface) covered by 8 feet of clean fill across the entire site; construction of two water treatment plants, and wing walls on either end of the bulkhead. It was also asserted that the MGP contamination keeps moving; that it's unclear how long the sealed bulkheads will last; and that the contamination could overcome the bulkheads and enter the canal, suggesting that wing walls are needed.

Response: The elimination of the removal of soil to a depth of 8 feet site-wide was explained in response to comment 2 above, based on additional sampling conducted after the 25% design submittal. Although a plastic liner was contemplated early in the design process as a means to limit subsurface infiltration, subsequent site-specific and regional groundwater modeling determined that groundwater mounding is not expected to cause a problem under post-remediation conditions. However, out of an abundance of caution, the hydraulic relief system described above was installed, though even under extreme conditions, this system is only expected to receive surficial stormwater runoff and water that infiltrates the ground. Figures 2 and 3 in Appendix A provide the layout of the hydraulic relief system. Also, a plastic liner would create water management problems for any planned development activities. As detailed in the remedy explanation above, surficial stormwater and that which infiltrates the ground will be captured and screened by the hydraulic relief system and ultimately discharge to the canal.

Also, as noted above, during the design phase of the project wing walls were determined not to be needed because a series of coal tar recovery wells will be installed along the sealed bulkhead barrier wall, including at the southern edge of

the site at Huntington Street, to intercept remaining tar and mitigate the potential for off-site migration, including into the canal. Inside the barrier wall, mobile tar has been and will continue to be removed through a series of tar recovery wells. Tar has been monitored and successfully recovered from on-site recovery wells since 2010. DEC understands that EPA is requiring and will be overseeing installation of a sealed bulkhead barrier wall across the end of Huntington Street and elsewhere along the entirety of EPA's project area (sealed where appropriate) to facilitate the dredging project. EPA representatives have indicated that the sealed bulkhead across the end of Huntington Street will tie into the sealed Citizens bulkhead to the north and the sealed bulkhead installed along the Quadrozzi property (240 Huntington Street) to the south. It is unclear whether EPA will require any recovery wells on the upland side of the sealed bulkhead barrier wall across the end of Huntington Street. This series of connected sealed bulkhead barrier walls combined with tar collection on the upgradient side provide redundancy in the design for protection of the canal from migration of residual NAPL. Similar to the Citizens bulkhead, the 240 Huntington bulkhead was sealed with Adeka Ultraseal P-200 sealant, as required by the USEPA for the canal dredging project. Further discussion of the sealant is provided below. The 240 Huntington property recently entered the NYS BCP and is currently conducting a remedial investigation on that property. Grid had previously been denied access to that property, and therefore had only limited data along Huntington Street and one boring in the northeast corner of that property.

In addition to the above, as presented in the remedial design documents, wing walls were not included in the design based on the review of all the site information and data by Arcadis, National Grid's remedial design consultant. DNAPL transmissivity testing conducted at monitoring wells CGMW-41I and CGMW-43D and at recovery well CGRW-06I during the supplemental design investigation showed a low potential for DNAPL recoverability indicating that, where present, DNAPL in soil is relatively immobile (Arcadis, 2016) <https://www.dec.ny.gov/data/DecDocs/C224012/> (excerpts included in Document 11, Appendix C). Moreover, a review of existing data at the eastern (Parcel II) and southwestern (Parcel III) edges of the site shows that DNAPL-saturated soils are limited in both horizontal and vertical extent in these areas, and generally are not present or diminish above elevation -40 feet NAVD88. The limited presence of DNAPL in the shallow zone supports reduced transmissivity concerns in this zone. In effect, the DNAPL has already migrated vertically to depth rather than continuing to migrate in mass laterally. Table 2, in Appendix B, contains a copy of the 2012 NAPL recovery table which, by the volumes removed, supports the observation that the tar at shallow levels is not mobile; see wells CGRW-6 (S, I, and D).

The design depth for the Citizens bulkhead is -43 feet NAVD88 for the tie-back portion and -83 feet NAVD88 for the king piles. Intermediate and deep passive recovery wells will be installed/monitored along the sealed barrier wall, and elsewhere on the site where DNAPL saturation was observed, as part of the long-

term DNAPL recovery and monitoring program at the site. Additional wells can be installed if needed based on monitoring data.

Figure 4 in Appendix A provides the location of the tar recovery wells along the bulkhead. Table 1, in Appendix B, provides the elevations for the recovery wells and the screened intervals for each. All of the cross-sections included in the 2005 RI report are included in Appendix A. Cross-sections E – E', G – G', and I – I' are Figures 12, 13, & 14 respectively. Cross section E – E' clearly shows areas of tar which were either deeper than the design excavation depth (CGSB-23) or located in an area which is inaccessible due to the existence of the NYC Sewer (CGSB-14). Mobile tar has and will continue to be removed with the tar recovery well system. Tar which may mobilize from these locations will be captured by the existing tar recovery wells or those to be installed in these locations. Cross Section E – E' and I – I' intersect near the southern boundary of Parcel III near Huntington Street. Merging the data from the two borings used to depict the depth of contamination in this area, there is a layer of blebs, globs and lenses of tar from -19 to -25 feet, tar staining odors from -30 to at least -39 feet and more blebs, globs and lenses below -39 feet. The average bottom of the sealed steel bulkhead barrier wall along the former Citizens MGP project is -43 feet. Location MW-08 on Parcel III is near the recovery well cluster CGRW-06, S, I, & D. As indicated above, recovery wells 6I and 6D have been consistently successful in removing tar from this area. Tar has been recovered at the shallow depth, but a significantly lower volume. Well CGMW-06 is located on Huntington Street. There is tar at this location at the depths discussed above. As noted above, EPA representatives have indicated that the sealed bulkhead across the end of Huntington Street will tie into the sealed Citizens bulkhead to the north and the sealed bulkhead installed along the Quadrozzi property (240 Huntington Street) to the south. Tar retained by the sealed bulkhead in this location will be captured by recovery wells installed under the authority of the BCP for two sites, the 240 Huntington Street site, and the 459 Smith Street site, Parcel III of the former Citizens MGP site.

Cross section G – G' extends from Parcel IV to the canal. As discussed above, Parcel IV is under a separate order from Parcels I, II and III and has been plagued by access issues. It was noted during the week of May 5, 2021, that parcel IV is now vacant and this may be an opportunity to revisit this project. DEC has opened up discussions with National Grid on this.

Information from the design, carried through in practice during the construction: The bulkhead barrier wall has been constructed using shop-welded steel sheet pile pairs. As noted above, a joint sealant, Adeka Ultraseal P-201, was applied in the field to non-welded joints (i.e., between the interlocks of adjacent welded sheet pile pairs and at sheet pile-to-king pile and king pile-to-king pile connections). Bench-scale testing conducted as part of the barrier wall pilot test program (GEI, 2015) confirmed the effectiveness of these joint sealants, together with the mechanical

interlocks of the steel piles, to achieve the barrier wall joint impermeability performance criteria of 1×10^{-6} centimeters per second. See Document 3 in Appendix C for information on the sheet pile design specifications and Document 10 in Appendix C for the bench scale testing. There is a link to entire PDI investigation which may be accessed directly through the DEC InfoLocator at: <https://www.dec.ny.gov/pubs/109457.html>).

In addition to coatings and sealants (specs in Documents 4 and 5 in Appendix C), the bulkhead barrier wall system has a corrosion protection system comprised of the following:

- (1) sacrificial steel in the headwall piles, anchor piles, and tie rods; and
- (2) protective coatings on all steel materials. Headwall sheet piles and king piles are coated on both the water and land sides with a shop-applied epoxy coating system. Tie rods, pile caps, hardware, and other miscellaneous steel materials have been hot-dipped galvanized. System components are inspected at the completion of the remediation to ensure the coatings are sound, and repairs are performed as needed.

6. Comment: The hydraulic relief system is not capable of treating all the water, and the developer should look into resizing the system.

Response: It's not clear what was meant by "treating all of the water." The hydraulic relief system was designed to capture surficial stormwater runoff and water that infiltrated the ground along the bulkhead barrier wall in order to maintain sufficient hydraulic head differential between the groundwater elevation on the upland side of the bulkhead and the surface water elevation in the canal. (See also response to Comment 5.) As noted earlier, the stormwater will not be contacting the deeper remaining MGP contamination, therefore direct contaminant runoff to the canal is not a concern in that respect. Litter, sediment, and oil/grease commonly found in urban stormwater runoff will be removed by the hydraulic relief system as described above. As is the case with stormwater management systems worldwide, not all stormwater from extreme events can, nor should, be captured as the size of such a system would be impracticably large, cost prohibitive, and would extend the duration of the impact from a large storm event. The developer will also have to provide for stormwater collection and management with respect to the completed development.

7. Comment: A city storm sewer runs through the site that the State was very concerned about when it was requested the site be excavated. It was asserted that there is a big constriction in the sewer line, and that it will be problematic to have a future development tie into this sewer increasing the load near a constriction.

Response: Figure 5 in Appendix A provides the location of the City Sewer Line. Information gathered during the remedial design phase confirmed that this is a

delicate old brick sewer that has been repaired/replaced in some areas. It is not clear whether these repairs have resulted in the reported constriction and/or how severe the constriction is. Constrictions in the sewer line and hookup by the developer are not issues related to the remediation of the site. The developers will be required to address sanitary hookups and stormwater collection and management as part of their development project.

All the remedial work (i.e., excavation, pile driving, well installation, etc.) was designed and carried out with protection of this sewer as a requirement. The DEC, National Grid, their consultants and contractors, have all been very aware of the condition and sensitivity associated with the sewer line. The remedial design included a safety buffer of 25 feet from the center line of the sewer to the nearest remedial activities. Instrumentation was installed to monitor any movement in the sewer line throughout construction of the remedial elements. All efforts taken and the monitoring conducted indicate that there has not been an impact on the sewer line as the result of the remediation activities. Protection and monitoring of the sewer line during the development of the property will be the responsibility of the owner, City of New York, and the developer, Gowanus Green.

It should be noted that similar concerns and protections also apply to the sensitive gas shaft that runs through the site and under the Canal; hence the suggestion of the soft shoreline proposal around the gas shaft to close the barrier wall, as noted under the Summary of Remedial Elements above.

8. Comment: NYCOER's presentation to Community Board 6, on November 19, 2020, regarding the proposed Public Place development indicated that additional remediation may be needed before development.

Response: It has always been expected that remaining contamination, such as that associated with urban fill, will be encountered during future development, as is the case for most sites in NYC, which is why handling and management of this material will be one of the primary components of the SMP. Future on-site work of any type must adhere to the SMP. The SMP will include, amongst other things, procedures for handling and disposing of these materials, as well as a requirement to repair/replace any remedial elements disturbed or damaged during development. All work conducted during the remediation has been and will continue to be performed in accordance with the DEC/NYSDOH approved community air monitoring plan (CAMP). Any future intrusive work performed at the site must also be performed in accordance with the CAMP.

Additionally, future development work would trigger the change of use requirements in 6NYCRR Part 375-1.1(d), which requires at least 60 days-notice before a change of use including, but not limited to information related to how such

change may affect the site's proposed, ongoing or completed remedial program. The change of use notice and SMP requirements trigger DEC and NYSDOH involvement to ensure the development related work is protective of human health and the environment. IC/ECs are standard elements for all BCP sites (other than those projects which meet the goals for unrestricted use) in New York State.

As mentioned earlier, on November 25, 2020, Gowanus Green became a party to the BCA for Parcels I and II of the former Citizens MGP, joining National Grid and NYC. As such, Gowanus Green has expressed interest in submitting a pre-development investigation work plan to determine if and where their development may encounter any remaining contamination that may require remediation/management in accordance with the SMP. Smith Street Owner LLC (the BCP Volunteer and owner of 459 Smith Street/Parcel III of the former Citizens MGP site) has expressed a similar interest. The developers/BCP applicants are welcome to submit work plans for consideration by DEC/NYSDOH. DEC will continue discussions with both parties in development of these work plans.

9. Comment: Based on the NYCOER presentation to Community Board 6 responsibility for future management of the project is being transferred from the State, to the City, to the developers.

Response: To clarify, while the property ownership is expected to change from NYC to the developer, the DEC has overseen the site from initial investigation through remediation and will remain the governmental agency responsible for overseeing the long-term site management of the remedial elements, which includes the post-development period. Since New York is a home rule state, NYC's role will be to review and approve the development plans consistent with their local planning, zoning and land use laws and regulations. Neither the EPA nor the DEC have jurisdiction/authority to issue land use approvals for the specific development on any property/site. DEC's/NYSDOH's role is to ensure that the selected remedy is protective for the reasonably anticipated future use which, in this case, is restricted residential as defined in State regulations cited above, and that the site owner/developer follows the DEC/NYSDOH-approved SMP. As noted earlier, restricted residential is the use-level that is protective for the planned redevelopment as apartments/condos, schools and parks. Also, as noted above, pursuant to the SMP, the site owner will be required to provide periodic review reports to the DEC/NYSDOH, stamped and certified by a NYS professional engineer that the IC/ECs remain in place and functioning as designed.

10. Comment: The number of coal tar recovery wells should be increased.

Response: The number, locations and depths of the recovery wells is based on the depth, location and mobility of coal tar, as well as consideration of the planned

development areas (i.e., the final locations of recovery wells should not be beneath buildings). Figure 4 in Appendix A depicts the existing and currently planned recovery well locations along the barrier wall, as well as a table and cross-sections showing the screened depths for all existing and planned new recovery wells. The figure has been updated to include the existing screened intervals for recovery wells 06I and 06D on Parcel 3. Recovery well 06I is an intermediate well screened from elevation -32–62 feet (NAVD88). Well 06D is a deep well screened from elevation -76-86 feet (NAVD88). Each well has a 5-foot deep sump at the bottom of the screened interval to allow collection of tar. However, this recovery well plan is not yet final. Some of the planned additional wells are presented on Figure 4, others are being contemplated or evaluated, but the number and locations have not been finalized.

11. Comment: There should be a plan for recovering tar “in public” because that tar should not be recovered in a public space.

Response: The following was excerpted from DEC’s response to similar concerns raised by NYCOER.

“Regarding concerns about emptying coal tar recovery wells in a park with the public using the space, there are ways to minimize odors (e.g., plastic enclosure placed over the well when removing tar; placing the wells in subsurface vaults so the work is less visible to passersby; if conditions are appropriate (e.g., sufficiently recoverable quantities at a consistency conducive to pumping), a tar collection systems may be installed underground to pump the tar to a central location for removal; scheduling tar removal when an area is less busy/occupied by the public, etc.).

One project included as an example of where this is being done successfully is at ConEd’s East 115th St MGP (site #: V00540), which is on a school property. The bulk of the coal tar is located beneath an active school. A barrier wall with recovery wells was constructed on-site adjacent to the FDR highway to collect the tar to cut off its migration to the East River. There is a series of tar recovery wells each located in a subsurface vault. Tar is removed from wells within these vaults during an agreed upon time window to minimize any potential impacts to site occupants. Note that a sub-slab depressurization system (SSDS) was installed at the school, due to a chlorinated solvent plume coming onto the site, not due to the presence of coal tar beneath the school. For more information on the CE 115th Street MGP see: <https://www.dec.ny.gov/data/DecDocs/V00540>

Another example where coal tar is being recovered in a very active public park with ballfields is at the NYSEG – Oneonta MGP (site # 439001). See The tar is removed from the wells during times of low occupancy (e.g., no sports games, early am, later in evening). For more information on the

Oneonta MGP site, see the following:
<https://www.dec.ny.gov/data/DecDocs/439001/>

Additionally, note that, as pointed out in the Department's October 14, 2020 response to the CAG, Response #19 (attached) specifically relating to residential developments on former MGPs, we provided the following examples with the DIL link for each for further information:

- Stuyvesant Town in NYC (site # 231111/V00535) – active coal tar recovery being performed
 - <https://www.dec.ny.gov/data/DecDocs/231111/>
 - <https://www.dec.ny.gov/data/DecDocs/V00535/>
- Peter Cooper Village in NYC (site # 231112/V00536) – active coal tar recovery being performed
 - <https://www.dec.ny.gov/data/DecDocs/231112/>
 - <https://www.dec.ny.gov/data/DecDocs/V00536/>
- NYSEG – Washington St MGP in Binghamton (site # C704046)
 - <https://www.dec.ny.gov/data/DecDocs/C704046/>
- Two adjacent Polychrome BCP sites in Yonkers (C360098 and C360099). These sites include restricted residential development. These sites are heavily impacted by a nearby MGP, and tar is actively being recovered as part of those site's remedies.
 - <https://www.dec.ny.gov/data/DecDocs/C360099/>

It should be noted that coal tar recovery is a common remedial element that has been successfully (and safely) implemented at many MGP sites statewide." (Note: parenthetical and DIL links subsequently added).

12. Comment: There is significant contamination at depth in the planned location of the school, and if a building is constructed over the contamination, the vapor will find a way into the building. Venting this vapor is not a good thing. Vapor should be prevented from entering the building. EPA uses subsurface barriers (vapor barriers) to address vapor intrusion (parenthetical subsequently added for clarity).

It was asserted that the contamination is comprised of semi-volatile organic compounds (SVOCs) that become airborne, that naphthalene is a component that is not good to breathe, along with polycyclic aromatic hydrocarbons (PAHs) and BTEX (benzene, toluene, ethylbenzene and xylene).

Response: This comment incorrectly implies that school students will be exposed to remaining contamination via vapor intrusion. In fact, this concern is precisely why the remedy contains provisions to sample, evaluate and mitigate the potential for exposure via soil vapor intrusion (SVI). A post-construction SVI evaluation

must be performed, and mitigation implemented, if SVI is identified as an exposure pathway.

Vapor barriers and SSDS (active venting, with treatment as appropriate) are standard best industry practices that effectively mitigate SVI, by preventing sub-slab vapor from entering a building, regardless of the level of contamination remaining in the subsurface. If mitigation is required, the NYSDOH will require an active mitigation system, such as an SSDS, be installed. In fact, as noted above, vapor barriers and SSDSs are commonly paired to mitigate SVI, especially on new construction. This is a more conservative/redundant/protective approach, rather than just a passive vapor barrier. Further, as noted in the remedial summary above, it is NYCOER's practice to require vapor barriers on new construction. DEC/NYSDOH also typically recommend that new construction include installation of sub-slab piping so if post-construction SVI mitigation is necessary, the sub-slab portion of the system is already in place, preserving the integrity of the new slab/floor and vapor barrier.

The most recent understanding from Gowanus Green (developer for Parcels I and II) is that the school is currently planned for the northeast corner of Parcel I, adjacent to the deepest remedial excavation that extended to depths up to 22.5 feet bgs in this area (see Figure 8 in Appendix A, showing the general location of the excavation areas and the currently planned location of the school). Typically, SVI requiring remediation has not been found to be an issue at former MGP sites due to the semi-volatile nature of PAHs, the often highly weathered (degraded) nature of the BTEX, and the tendency of BTEX compounds to rapidly degrade in the presence of oxygen in the vadose zone. While BTEX and naphthalene are volatile compounds typically associated with past MGP operations, these compounds typically aren't found at concentrations in structures where NYSDOH would require mitigation. Nevertheless, the remedy for the Citizen's MGP site requires a post-construction SVI evaluation and, if necessary, mitigation.

13. Comment: Will wings on the bulkhead walls make the tar move inland as it builds up?

Response: As noted in the Summary of Remedial Elements and response to comment 5 above, there are remedial measures in place to prevent the situation posed by this commenter. See also response to comment 17 below.

14. Comment: What do you think would happen during a Superstorm Sandy type event? This area was severely flooded during Superstorm Sandy. This could overwhelm the treatment system. The extraction wells could be overwhelmed.

Response: The recovery wells are sealed, so storms/flooding are not an issue for them. The current grades across the majority of the site are well above the surrounding waterfront properties (including the street ends that abut the canal), and are above the preliminary base flood elevation for the 1% annual chance (i.e., 100-year) flood. The bulkhead will be trimmed following completion of remediation or establishment of final site grades to ensure stormwater will not be trapped behind the bulkhead. Additionally, as noted above, the hydraulic relief system will continue to collect stormwater and direct it to the canal. It is currently unknown whether the developers are planning to raise the site grade, which would further limit potential for site flooding and impacts (if any) thereof. Stormwater management will be addressed by the developers as part of the development design.

15. Comment: What will be done to control the migration of coal tar during pile driving for the new development? Coal tar could be “pushed out” during pile driving.

Response: As noted above, the sealed bulkhead barrier wall and coal tar recovery wells are designed to capture remaining tar to stop off-site migration. Protection and operation of these remedial elements must be factored into the development design.

16. Comment: The vapor mitigation system will discharge vapors above the roof of the buildings. What does this mean? Will this require monitoring?

Response: All agree that the goal is to prevent vapors from entering buildings. Please see the discussion of vapor barriers and vapor mitigation systems (SSDSs), all of which prevent vapors from entering buildings, under the Summary of Remedial Elements above, as well as the response to comment 12 above.

17. Comment: Coal tar has been observed leaving the site near Huntington Street south of Public Place. Why are there no retention walls to prevent this?

Response: The referenced location is on the 459 Smith Street parcel (Parcel III of the former Citizens MGP). The sealed bulkhead barrier wall and coal tar recovery wells will prevent further off-site migration of coal tar. DEC has required additional recovery wells be placed in this area based on site conditions and design parameters. Additionally, EPA has indicated that a sealed bulkhead barrier wall will be installed across the end of Huntington Street, and will tie into the south end of the Citizens sealed bulkhead barrier wall on the north side of the street and the 240 Huntington Street site sealed bulkhead barrier wall on the south side of the street. It is DEC’s understanding that sealed bulkhead barrier wall at the terminus of Huntington Street will be installed under EPA oversight in the coming months. This series of connected sealed bulkhead barrier walls combined with tar collection

on the upgradient side provide redundancy in the design for protection of the canal from migration of residual NAPL. See also response to comment 5.

18. Comment: DEC's presentation did not provide the depth of detail that the original presentation did.

Response: It was unclear which presentation was being referred to. The DEC project manager presented a summary of the remedy to the CAG as an agenda item during their July 30, 2020 meeting. A Q&A period was allowed at the end of the presentation until the CAG moved on to other business. DEC suggested that the CAG provide a list of questions that were unable to be answered due to lack of time, and the CAG moderator agreed to compile the list and provide to DEC. DEC followed up with the CAG and a list of questions was provided on September 25, 2020. The DEC subsequently provided answers to the CAG's questions on October 14, 2020. This response package is provided in Appendix D. Many of the issues raised in the December 1, 2020 CAG meeting were previously answered in DEC's October 14, 2020 response package. It is not clear whether the CAG distributed the responses to its members. The DEC did not receive any follow-up questions following our October 14th letter, but receipt of the response package was acknowledged by the CAG.

19. Comment: Shouldn't there be a barrier wing walls on all sites?

DEC Response: See the discussion of the sealed bulkheads and recovery wells under the Summary of Remedial Elements above, as well responses to comments 5 and 17 above.

20. Comment: What levels of contamination are found on all MGP sites statewide? What is the current land use on these former MGP sites (e.g., industrial, commercial, restricted residential, etc)?

DEC Response: There are over 250 MGP sites in NYS. To date, just over 100 of these sites have a completed remedial program, many with ongoing long-term site management requirements (see list of completed sites in Appendix E. Site-specific summary information can be obtained from the DEC's Environmental Site Database (<https://www.dec.ny.gov/chemical/8437.html>) by inputting the site code from the above-referenced table. Once on a specific site record in the database, there is a link to DEC InfoLocator, which contains key site-specific documents. DEC Info Locator (DIL) may also be accessed directly at <https://www.dec.ny.gov/pubs/109457.html>).

For completed sites, DIL should contain the environmental easement or deed restriction recorded for the site, which indicates the allowable site use (e.g., commercial, restricted residential, etc).

As for the contaminant levels for each site, investigation reports contain pre-remediation data, while interim remedial measure construction completion reports and final engineering reports contain post-remediation data. These are also available on DIL. Site management plans (SMPs) also typically contain a summary of remaining contamination. SMPs are available on DIL. If there is a specific document of interest that is not found on DIL, please contact DEC and your request will be directed to the appropriate project manager.

In recent discussions, EPA requested a summary of the status of the MGP sites on the Gowanus Canal and Newtown Creek. These summaries are provided in Appendix F.

21. Comment: Is National Grid getting tax credits to clean up their contamination?

Response: Upon successful completion of the remediation under the BCP, the entities on the BCA are issued a Certificate of Completion (COC) and a liability release. "Participants" in the BCP are responsible parties and are required to remediate contamination on- and off-site, as well as to reimburse the state for state (DEC/NYSDOH) oversight costs incurred. "Volunteers" in the BCP are only required to remediate on-site contamination and are not responsible to reimburse state oversight costs. DEC does not regulate which entity(ies) on a BCA fund(s) the remedial program when there is more than one entity on a BCA.

The NYS Department of Tax and Finance (DTF) regulates which entities are eligible for tax credits. The available tax credits include:

- remediated brownfield credit for real property taxes;
- environmental remediation insurance credit; and
- brownfield redevelopment tax credit.

For general information about BCP tax credit eligibility and rates, see the following link: <http://www.dec.ny.gov/chemical/101350.html>. For specific questions regarding tax credits, please contact Matt Gokey at matthew.gokey@tax.ny.gov.